

What is claimed

1 1. An eye viewing device comprising:
2 a housing having an observer end and a patient end;
3 an illumination system at least partially disposed in
4 said housing;
5 an imaging system at least partially disposed in said
6 housing;
7 an image sensor for generating image signals;
8 a processor system for processing image information
9 corresponding to image signals generated by said image sensor;
10 a module holder defined by said housing at said patient
11 end; and
12 a replaceable module comprising at least said image
13 sensor replaceably received in said holder.

1 2. The eye viewing device of claim 1, wherein said
2 replaceable module further comprises said processor system.

1 3. The eye viewing device of claim 1, further comprising
2 an electronic display in communication with said processor
3 system.

1 4. The eye viewing device of claim 1, wherein said
2 replaceable module further comprises said display.

1 5. The eye viewing device of claim 1, wherein said
2 display is externally mounted on said module.

1 6. The eye viewing device of claim 1, wherein said
2 display is externally mounted on a face of said module.

1 7. The eye viewing device of claim 1, wherein said
2 display is externally mounted on said module.

1 8. The eye viewing device of claim 1, wherein said
2 display is internally mounted in an interior of said module.

1 9. The eye viewing device of claim 1, wherein said
2 display is mounted on a top of said housing.

1 10. The device of claim 1, wherein said device includes
2 a head worn display apparatus which includes said display.

1 11. The eye viewing device of claim 1, wherein said
2 device includes a communication link component for

3 facilitating communication of image information externally
4 from said housing.

1 12. The eye viewing device of claim 2, wherein said
2 replaceable module further comprises said communication link.

1 13. The eye viewing device of claim 2, wherein said
2 communication link includes a cable.

1 14. The eye viewing device of claim 2, wherein said
2 communication link comprises a wireless communication link.

1 15. The eye viewing device of claim 2, wherein said
2 communication link comprises a transportable memory structure.

1 16. The eye viewing device of claim 2, further
2 comprising an electronic display.

1 17. The eye viewing device of claim 2, wherein said
2 device further includes an electronic display spaced apart
3 from said housing and said module, and communication with said
4 communication link.

1 18. The eye viewing device of claim 1, wherein said
2 housing and said module include complementary mating
3 connectors which are adapted to mate when said module is
4 received in said holder.

1 19. The eye viewing device of claim 3, wherein said
2 processor system is incorporated in said housing and wherein
3 said mating connectors are adapted to provide breakable
4 communication between said image sensor and said processor
5 system.

1 20. The eye viewing device of claim 3, wherein said
2 processor system is incorporated in said module, and wherein
3 said device further includes a display mounted on said
4 housing, wherein said mating connectors provide breakable
5 communication between said processor system and said display.

1 21. The device of claim 3, wherein said device includes
2 a battery power supply incorporated in said housing, wherein
3 said mating connectors provide breakable communication between
4 an electronic component of said module and said power supply.

1 22. The device of claim 3, wherein said module further
2 comprises a communication link component for facilitating
3 communication of image information externally from said
4 housing.

1 23. An eye viewing device comprising:
2 a hand-held housing having an observer end and a patient
3 end;

4 an illumination system at least partially disposed in
5 said housing;

6 an imaging system at least partially disposed in said
7 housing;

8 an image sensor for generating image signals; and

9 a processor system for processing image information
10 corresponding to image signals generated by said image sensor.

1 24. The eye viewing device of claim 23, further
2 comprising an electronic display in communication with said
3 processor system.

1 25. The eye viewing device of claim 23, wherein said
2 device includes a communication link component for
3 facilitating communication of image information externally

4 from said hand-held housing.

1 26. The eye viewing device of claim 23, wherein said
2 hand-held housing further includes a holder defined therein,
3 and wherein said device includes a module replaceably held in
4 said holder, said module including at least said image sensor.

1 27. The eye viewing device of claim 23, wherein said
2 holder and said module comprises complementary mating
3 connectors which mate when said module is held in said holder.

1 28. An eye viewing device comprising:
2 a housing having an observer end and a patient end;
3 an illumination system at least partially disposed in
4 said housing;
5 an imaging system at least partially disposed in said
6 housing;
7 an eyepiece lens for facilitating direct view of an eye
8 structure;
9 an image sensor for generating image signals;
10 a processor system for processing image information
11 corresponding to image signals generated by said image sensor;
12 and

13 a beam splitter intersecting said imaging axis and
14 disposed to define a pair of focal planes, one of said focal
15 planes substantially coinciding with a position of said image
16 sensor, and another of said focal planes defined forward of
17 said eyepiece lens.

1 29. The eye viewing device of claim 28, wherein said
2 device includes a communication link component for
3 facilitating communication of image information externally
4 from said housing.

1 30. The eye viewing device of claim 28, wherein said
2 device includes a communication link component for
3 facilitating communication of image information externally
4 from said housing, wherein said housing includes a holder for
5 holding a replaceable module, and wherein said device includes
6 a module replaceably held in said holder, said module
7 including at least said image sensor.

1 31. The eye viewing device of claim 28, wherein said
2 device includes a communication link component for
3 facilitating communication of image information externally
4 from said housing, wherein said housing includes a holder for

5 holding a replaceable module, wherein said device includes a
6 module replaceably held in said holder, said module including
7 at least said image sensor, and wherein said module and said
8 holder include complementary mating connectors adapted to mate
9 when said module is held in said holder.

1 32. The eye viewing device of claim 28, wherein said
2 housing is a hand-held housing.

1 33. The eye viewing device of claim 28, wherein said
2 device includes a communication link component for
3 facilitating communication of image information externally
4 from said housing, wherein said housing includes a holder for
5 holding a replaceable module, wherein said device includes a
6 module replaceably held in said holder, said module including
7 at least said image sensor, wherein said device further
8 comprises an electronic display.

1 34. The eye viewing device of claim 28, wherein said
2 device includes a communication link component for
3 facilitating communication of image information externally
4 from said housing, wherein said housing includes a holder for
5 holding a replaceable module, wherein said device includes a

6 module replaceably held in said holder, said module including
7 at least said image sensor, wherein said module and said
8 holder include complementary mating connectors adapted to mate
9 when said module is held in said holder, and wherein said
10 device further includes an electronic display.

1 35. The eye viewing device of claim 28, wherein said
2 housing is a hand-held housing and wherein said device further
3 includes an electronic display.

1 36. The eye viewing device of claim 28, wherein said
2 device includes a communication link component for
3 facilitating communication of image information externally
4 from said housing.

1 37. An eye viewing device comprising:
2 a housing having an observer end and a patient end;
3 an illumination system at least partially disposed in
4 said housing;
5 an imaging system at least partially disposed in said
6 housing;
7 an eyepiece lens for facilitating direct view of an eye
8 structure;

9 an image sensor for generating image signals;
10 a processor system for processing image information
11 corresponding to image signals generated by said image sensor;
12 and
13 a moveable mirror movable between a first position,
14 wherein said mirror defines a focal plane substantially at an
15 active surface of said image sensor, and a second position
16 wherein said mirror is spaced apart from said imaging system
17 so that a focal plane of said imaging system is defined
18 forward of said eyepiece lens.

1 38. The eye viewing device of claim 37, wherein said
2 device includes a communication link component for
3 facilitating communication of image information externally
4 from said housing.

1 39. The eye viewing device of claim 37, wherein said
2 device includes a communication link component for
3 facilitating communication of image information externally
4 from said housing, wherein said housing includes a holder for
5 holding a replaceable module, and wherein said device includes
6 a module replaceably held in said holder, said module
7 including at least said image sensor.

1 40. The eye viewing device of claim 37, wherein said
2 device includes a communication link component for
3 facilitating communication of image information externally
4 from said housing, wherein said housing includes a holder for
5 holding a replaceable module, wherein said device includes a
6 module replaceably held in said holder, said module including
7 at least said image sensor, and wherein said module and said
8 holder include complementary mating connectors adapted to mate
9 when said module is held in said holder.

1 41. The eye viewing device of claim 37, wherein said
2 housing is a hand-held housing.

1 42. The eye viewing device of claim 37, wherein said
2 device includes a communication link component for
3 facilitating communication of image information externally
4 from said housing, wherein said housing includes a holder for
5 holding a replaceable module, wherein said device includes a
6 module replaceably held in said holder, said module including
7 at least said image sensor, wherein said device further
8 comprises an electronic display.

1 43. The eye viewing device of claim 37, wherein said
2 device includes a communication link component for
3 facilitating communication of image information externally
4 from said housing, wherein said housing includes a holder for
5 holding a replaceable module, wherein said device includes a
6 module replaceably held in said holder, said module including
7 at least said image sensor, wherein said module and said
8 holder include complementary mating connectors adapted to mate
9 when said module is held in said holder, wherein said device
10 further includes an electronic display.

1 44. The eye viewing device of claim 37, wherein said
2 housing is a hand-held housing and wherein said device further
3 includes an electronic display.

1 45. The eye viewing device of claim 37, wherein said
2 device includes a communication link component for
3 facilitating communication of image information externally
4 from said housing.

1 46. An eye viewing device system comprising:
2 a housing having an observer end and a patient end;
3 an illumination system at least partially disposed in

4 said housing;

5 an imaging system at least partially disposed in said
6 housing;

7 a module holder defined by said housing at said patient
8 end; and

9 at least first and second replaceable modules, each
10 replaceably receivable in said holder, said holder adapted to
11 receive one of said modules at a given time, wherein said
12 first module comprises an eyepiece lens for facilitating
13 direct view of an eye structure and said second module
14 comprises at least an image sensor for generating image
15 signals corresponding to an eye structure.

1 47. The system of claim 46, wherein said second module
2 further comprises an electronic display.

1 48. The system of claim 46, wherein said second module
2 further comprises a face mounted display.

1 49. The system of claim 46, wherein said second module
2 further comprises an externally mounted display.

1 50. The system of claim 46, wherein said second module

2 further comprises an electronic display mounted in an interior
3 of said module.

1 51. The system of claim 46, further comprising a
2 communication link component for facilitating communication of
3 image information from said housing.

1 52. The system of claim 46, wherein said housing is a
2 hand-held housing.

1 53. The system of claim 46, wherein said holder and said
2 second module comprise complementary mating connectors.